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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/576,319	04/18/2006	Mark Thomas Johnson	NL 031253	9393
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EXAMINER THOMAS, BRANDIN				
ART UNIT 2873		PAPER NUMBER		
MAIL DATE 05/12/2008		DELIVERY MODE PAPER		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/576,319

**Applicant(s)**

JOHNSON ET AL.

**Examiner**

BRANDI N. THOMAS

**Art Unit**

2873

**Period for Reply** -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 08 January 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-21 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 April 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-8508)
- Paper No(s)/Mail Date 2/26/08
- 4) ☐ Interview Summary (PTO-413)
- Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Individual Patent Application
- 6) ☒ Other: Detailed Action

## **DETAILED ACTION**

### ***Information Disclosure Statement***

1. Acknowledgement is made of receipt of Information Disclosure Statement(s) (PTO-1449) filed 2/26/08. An initialed copy is attached to this Office Action.

### ***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-8, 10-14, 16, 18, and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gordon, II et al. (6271823 B1) in view of Liang et al. (6751007).

Regarding claim 1, Gordon, II et al. discloses, in figures 2A, 2B, 4A, and 4C, a color electrophoretic display comprising at least one pixel (26) operative to display visible light in a predetermined range (red, green, and blue) of wavelengths (col. 7, lines 37-42), each pixel (26) comprising at least two sub-pixels (14, 16, 18) which each comprise: a color filter (30, 32, and 34) operative to absorb a fixed sub-range (cyan, magenta, yellow) of said predetermined range (red, green, and blue) of wavelengths (col. 7, lines 37-42); an electrophoretic media (12a-12c) comprising two types of particles (10a-10c) (col. 7, lines 37-42 and 62-67), respectively; and means (8 and 20) for separately controlling the spatial distribution of the respective particles (10a-10c) in said electrophoretic media (12a-12c) between visible and invisible locations (col. 6, lines 39-42); wherein said fixed sub-ranges (cyan, magenta, and yellow) of the respective sub-

pixels in each pixel (26) are essentially non-overlapping and in combination cover essentially all of said predetermined range of wavelengths (red, green, and blue); and wherein, in each sub-pixel, said second and third sub-ranges (cyan, magenta, and yellow) are different from each other, and cover essentially all of said predetermined range (red, green, and blue) of wavelengths only in combination with the fixed sub-range of the related sub-pixel (col. 7, lines 37-42) but does not specifically disclose each type of particle being operative to absorb a second and third sub-range of said predetermined range of wavelengths. Liang et al. discloses each type of particle being operative to absorb a second and third sub-range of said predetermined range of wavelengths (col. 15, lines 21-33). Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention to combine the device of Gordon, II et al. with the particles of Liang et al. for the purpose of having a multiple color display (col. 15, lines 21-33).

Regarding claim 2, Gordon, II et al. discloses, in figures 2A, 2B, 4A, and 4C, a color electrophoretic display, wherein the color filter is a color filter element (30, 32, and 34) (col. 7, lines 37-42).

Regarding claim 3, Gordon, II et al. discloses, in figures 2A, 2B, 4A, and 4C, a color electrophoretic display, wherein the electrophoretic media (12a-12c) comprises the color filter (30, 32, and 34) as a colored fluid (col. 7, lines 47-50).

Regarding claim 4, Gordon, II et al. discloses, in figures 2A, 2B, 4A, and 4C, a color electrophoretic display, wherein said color filters (30, 32, and 34) and said particles (10a-10c) are operative to transmit wavelengths that are not absorbed (col. 7, lines 35-46).

Regarding claim 5, Gordon, II et al. discloses, in figures 2A, 2B, 4A, and 4C, a color electrophoretic display, wherein said predetermined range (red, green, and blue) of wavelengths substantially covers the entire spectrum of visible light (col. 7, lines 37-42).

Regarding claim 6, Gordon, II et al. discloses, in figures 2A, 2B, 4A, and 4C, a color electrophoretic display, wherein each pixel (26) comprises three sub-pixels (14, 16, and 18) in which the fixed sub-ranges of the filter elements (30, 32, and 34) cover red, green, and blue wavelengths (col. 7, lines 37-42), respectively, such that the respective filter elements (30, 32, and 34) are operative to transmit cyan, magenta, and yellow light waves, respectively (col. 7, lines 37-42).

Regarding claim 7, Gordon, II et al. discloses, in figures 2A, 2B, 4A, and 4C, a color electrophoretic display, wherein said particles (10a-10c) are operative to absorb red, green, or blue wavelengths, respectively, and thus to transmit cyan, magenta, or yellow wavelengths (col. 7, lines 37-42).

Regarding claim 8, Gordon, II et al. discloses, in figures 2A, 2B, 4A, and 4C, a color electrophoretic display, wherein said particles are operative to absorb cyan, magenta, or yellow wavelengths, respectively, and thus to transmit red, green or blue, wavelengths (col. 7, lines 37-42 and 62-67 and col. 8, lines 1-5).

Regarding claim 10, Gordon, II et al. discloses, in figures 2A, 2B, 4A, and 4C, a color electrophoretic display, wherein said electrophoretic media (12a-12c) in each sub-pixel is contained in a visible pixel volume, providing for said visible locations, and in two reservoirs (cells 14 and 16, wherein the particles are not seen), each reservoir (14 and 16) providing for

invisible locations for particles of respective type (when using black particles the light is absorbed before it reaches the viewers) (col. 7, lines 13-17 and 37-42).

Regarding claim 11, Gordon, II et al. discloses, in figures 2A, 2B, 4A, and 4C, a color electrophoretic display, wherein said means for separately controlling the spatial distribution of the respective particles (10a-10c) comprises data electrodes and reset electrodes (8 and 20) arranged in each reservoir (14 and 16) (figure 1A and 1B).

Regarding claim 12, Gordon, II et al. discloses, in figures 2A, 2B, 4A, and 4C, a color electrophoretic display, wherein said reservoirs (14 and 16) are covered by a black matrix (the use of black particles) such that particles residing in the respective reservoir (14 and 16) are made invisible (col. 7, lines 13-17).

Regarding claim 13, Gordon, II et al. discloses, in figures 2A, 2B, 4A, and 4C, a color electrophoretic display, wherein each sub-pixel comprises a reflector (6a-6c) reflective for light in said predetermined range (red, green, and blue) of wavelengths, such that ambient light transmitted through said color filter element (30, 32, and 34) and through said electrophoretic media (12a-12c) is reflected back and retransmitted through said color filter element (30, 32, and 34) (col. 7, lines 19-25 and 56-59).

Regarding claim 14, Gordon, II et al. discloses, in figures 2A, 2B, 4A, and 4C, a color electrophoretic display, further comprising a light source (not shown) operative to emit light in said predetermined range (red, green, and blue) of wavelengths through said color filter elements (30, 32, and 34) and through said electrophoretic media (12a-12c) (col. 1, lines 36-39, col. 3, lines 66-67, and col. 4, lines 1-2).

Regarding claim 16, Gordon, II et al. discloses, in figures 2A, 2B, 4A, and 4C, a color electrophoretic display, wherein said electrophoretic media (12a-12c) in at least one sub-pixel comprises a third particle type which is operative to absorb essentially the same sub-range of wavelengths as the corresponding color filter element in that sub-pixel (col. 7, lines 37-42).

Regarding claims 18 and 19, Gordon, II et al. discloses, in figures 2A, 2B, 4A, and 4C, a method for driving a color electrophoretic display, comprising the steps of: resetting each sub-pixel by moving the particles (10a-10c) to their respective reservoir (figures 1A and 1B); receiving pixel image information regarding an image to be displayed; determining a particle mixture (12a-12c) corresponding to said image (col. 6, lines 39-42); and filling each pixel volume with color particles (10a-10c) thus forming said particle mixture (12a-12c) (col. 6, lines 39-42).

4. Claims 9, 15, 17, 20, and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gordon, II et al. (6271823 B1) in view of Liang et al. (6751007) as applied to claim 1 above, and further in view of Herb et al. (2003/0132908).

Regarding claim 9, Gordon, II et al. discloses, in figures 2A, 2B, 4A, and 4C, a color electrophoretic display but does not specifically disclose wherein said two particle types in each sub-pixel have different polarities. Herb et al. discloses wherein said two particle types in each sub-pixel have different polarities (section 0267, lines 1-4). Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to combine the device of Gordon, II et al. with the particles of Herb et al. for the purpose of showing the particles mobility (section 0267, lines 1-4).

Regarding claim 15, Gordon, II et al. discloses, in figures 2A, 2B, 4A, and 4C, a color electrophoretic display but does not specifically disclose wherein said particles are all chosen

from a group consisting of: positively charged particles operative to absorb wavelengths of a first color, negatively charged particles operative to absorb wavelengths of a second color, positively charged particles operative to absorb wavelengths of a third color, and negatively charged particles operative to absorb wavelengths of said third color, such that the total number of particle types in the display is four. Herb et al. discloses wherein said particles are all chosen from a group consisting of: positively charged particles operative to absorb wavelengths of a first color, negatively charged particles operative to absorb wavelengths of a second color, positively charged particles operative to absorb wavelengths of a third color, and negatively charged particles operative to absorb wavelengths of said third color, such that the total number of particle types in the display is four (section 0267, lines 1-4 and section 0271, lines 1-3). Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to combine the device of Gordon, II et al. with the particles of Herb et al. for the purpose of four-color image pixel (section 0267, lines 1-4 and section 0271, lines 1-3).

Regarding claims 17, 20, and 21, Gordon, II et al. discloses, in figures 2A, 2B, 4A, and 4C, a color electrophoretic display but does not specifically disclose using an ink-jet printing technology for filling said pixels with said electrophoretic media. However, the method of forming a device is not germane to the issue of patentability of the device itself. Therefore, this limitation has not been given patentable weight.

#### ***Response to Arguments***

5. Applicant's arguments with respect to claims 1-21 have been considered but are moot in view of the new ground(s) of rejection.



***Conclusion***

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to BRANDI N. THOMAS whose telephone number is (571)272-2341. The examiner can normally be reached on Monday - Thursday from 6-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ricky Mack can be reached on 571-272-2333. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Brandi N Thomas/  
Examiner  
Art Unit 2873

BNT  
April 9, 2008

/Ricky L. Mack/  
Supervisory Patent Examiner, Art Unit 2873